

What is claimed is:

1. A wireless VLAN construction method in a wireless LAN system in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via a wireless
5 interconnecting device, wherein

in said wireless interconnecting device, a VLAN group is assigned to each of the wireless terminals belonging to the wireless interconnecting device based upon a MAC address of each of the wireless terminals, and administrative information on the wireless terminals is stored, and

10 in the wireless interconnecting device, whether a received packet is tagged or untagged is judged, and, in a case where the packet is judged to be tagged, the packet is transmitted with a tag removed when the packet is unicast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, while the packet is transferred when the
15 packet is broadcast, and transmitted with the tag removed when the packet is broadcast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, and,

in a case where the received packet is judged to be untagged in the judgment whether the received packet is tagged or untagged, when the
20 untagged packet is unicast, a corresponding VLAN identifier is obtained from said administrative information based upon a destination MAC address of the packet and the packet is transferred with the VLAN identifier attached thereto, while, when the untagged packet is broadcast, a corresponding VLAN identifier is obtained from said administrative information based upon a
25 destination IP address of the packet and the packet is transferred with the VLAN identifier attached thereto, and thereby the wireless VLAN is realized.

2. A VLAN construction method in a wireless LAN system according to claim 1, wherein

30 said administrative information includes the VLAN identifier, the IP address and a subnet mask related to the MAC address of the wireless terminal.

3. A VLAN construction method in a wireless LAN system according to claim 2, wherein

when the received packet is tagged and broadcast, whether or not the packet needs to be transmitted to the wireless terminal belonging to the wireless interconnecting device is judged according to a judgment whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, and, when the wireless terminal is judged to exist in said administrative information, the packet is judged to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

4. A VLAN construction method in a wireless LAN system according to claim 3, wherein

in the judgment whether or not the wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, when the wireless terminal is judged not to exist in said administrative information, a VLAN identifier is obtained from the packet to judge whether or not the VLAN identifier exists in said administrative information, and, when the VLAN identifier is judged to exist in said administrative information, the packet is judged to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

5. A VLAN construction method in a wireless LAN system according to claim 4, wherein

in a case where the received packet is the untagged packet and unicast, transferring of the packet to which the VLAN identifier obtained based upon the destination MAC address of the packet is attached is executed when whether or not the destination MAC address of the received packet exists in said administrative information is judged and the destination MAC address is judged not to exist in said administrative information, the acquisition of the VLAN identifier from said administrative information based upon the destination MAC address being executed by obtaining the source MAC

address from the received packet and then obtaining the VLAN identifier corresponding to the source MAC address from said administrative information.

- 5 6. A VLAN construction method in a wireless LAN system according to claim 5, wherein

in a case where the received packet is the untagged packet and broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed
10 when whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which said destination IP address belongs exists in said administrative information is judged and the wireless terminal is judged to exist in said administrative information, by obtaining the VLAN identifier of the wireless terminal from said administrative information and attaching the
15 obtained VLAN identifier to the untagged packet.

7. A VLAN construction method in a wireless LAN system according to claim 6, wherein

in a case where the received packet is the untagged packet and
20 broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address belongs is judged not to exist in said administrative information, by obtaining the source MAC address
25 from the untagged packet and then obtaining the VLAN identifier corresponding to the source MAC address from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

- 30 8. A VLAN packet processing program for a wireless interconnecting device executed therein for constructing a wireless VLAN in a wireless LAN system in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said

wireless interconnecting device, wherein,

the VLAN packet processing program enables said wireless interconnecting device to assign a VLAN group to each of the wireless terminals belonging to said wireless interconnecting device based upon a
5 MAC address of each of the wireless terminals, and causes said wireless interconnecting device to store administrative information on the wireless terminals as a reference table, and

causes said wireless interconnecting device to perform the following VLAN packet processing steps:

10 whether a received packet is tagged or untagged is judged, and, in a case where the packet is judged to be tagged, the packet is transmitted with a tag removed when the packet is unicast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, while the packet is transferred when the packet is broadcast, and transmitted with the
15 tag removed when the packet is broadcast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, and,

in a case where the received packet is judged to be untagged in the judgment whether the received packet is tagged or untagged, when the untagged packet is unicast, a corresponding VLAN identifier is obtained from
20 said administrative information based upon a destination MAC address of the packet and the packet is transferred with the VLAN identifier attached thereto, while, when the untagged packet is broadcast, a corresponding VLAN identifier is obtained from said administrative information based upon a destination IP address of the packet and the packet is transferred with the
25 VLAN identifier attached thereto.

9. A VLAN packet processing program for a wireless interconnecting device according to claim 8, wherein

said administrative information includes the VLAN identifier, the IP
30 address and a subnet mask related to the MAC address of the wireless terminal.

10. A VLAN packet processing program for a wireless interconnecting

device according to claim 9, wherein

the VLAN packet processing program causes said wireless interconnecting device to perform the following steps:

when the received packet is tagged and broadcast, whether or not the packet needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device is judged according to a judgment whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, and, when the wireless terminal is judged to exist in said administrative information, the packet is judged to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

11. A VLAN packet processing program for a wireless interconnecting device according to claim 10, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

in the judgment whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, when the wireless terminal is judged not to exist in said administrative information, a VLAN identifier is obtained from the packet to judge whether or not the VLAN identifier exists in said administrative information, and, when the VLAN identifier is judged to exist in said administrative information, the packet is judged to be transmitted to a wireless terminal belonging to the wireless interconnecting device.

12. A VLAN packet processing program for a wireless interconnecting device according to claim 11, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

in a case where the received packet is untagged and unicast, transferring of the packet to which a VLAN identifier obtained based upon the destination MAC address of the packet is attached is executed when whether

or not the destination MAC address of the received packet exists in said administrative information is judged and the destination MAC address is judged not to exist in said administrative information, the acquisition of the VLAN identifier from said administrative information based upon the destination MAC address being executed by obtaining a source MAC address from the received packet and then obtaining a VLAN identifier corresponding to the source MAC address from said administrative information.

13. A VLAN packet processing program for a wireless interconnecting device according to claim 12, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

in a case where the received packet is untagged and broadcast, transferring of the packet to which a VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which said destination IP address belongs exists in said administrative information is judged and the wireless terminal is judged to exist in said administrative information, by obtaining the VLAN identifier of the wireless terminal from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

14. A VLAN packet processing program for a wireless interconnecting device according to claim 13, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

in a case where the received packet is untagged and broadcast, transferring of the packet to which a VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address belongs is judged not to exist in said administrative information, by obtaining a source MAC address from the untagged packet and then obtaining a VLAN identifier corresponding to the source MAC

address from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

15. A recording medium on which recorded is a computer-readable VLAN packet processing program for a wireless interconnecting device to be executed therein for constructing a wireless VLAN in a wireless LAN system in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

the VLAN packet processing program enables said wireless interconnecting device to assign a VLAN group to each of the wireless terminals belonging to said wireless interconnecting device based upon a MAC address of each of the wireless terminals, and causes said wireless interconnecting device to store administrative information on the wireless terminals as a reference table, and

causes said wireless interconnecting device to perform the following VLAN packet processing steps:

whether a received packet is tagged or untagged is judged, and, in a case where the packet is judged to be tagged, the packet is transmitted with a tag removed when the packet is unicast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, while the packet is transferred when the packet is broadcast, and transmitted with the tag removed when the packet is broadcast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, and,

in a case where the received packet is judged to be untagged in the judgment whether the received packet is tagged or untagged, when the untagged packet is unicast, a corresponding VLAN identifier is obtained from said administrative information based upon a destination MAC address of the packet and the packet is transferred with the VLAN identifier attached thereto, while, when the untagged packet is broadcast, a corresponding VLAN identifier is obtained from said administrative information based upon a destination IP address of the packet and the packet is transferred with the VLAN identifier attached thereto.

16. A recording medium according to claim 15 on which a computer-readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

5 said administrative information includes the VLAN identifier, the IP address and a subnet mask related to the MAC address of the wireless terminal.

17. A recording medium according to claim 16 on which a computer-readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

10 the VLAN packet processing program causes said wireless interconnecting device to perform the following steps:

15 when the received packet is tagged and broadcast, whether or not the packet needs to be transmitted to the wireless terminal belonging to the wireless interconnecting device is judged according to a judgment whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, and, when the wireless terminal is judged to exist
20 in said administrative information, the packet is judged to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

18. A recording medium according to claim 17 on which a computer-readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

25 the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

30 in the judgment whether or not the wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, when the wireless terminal is judged not to exist in said administrative information, a VLAN identifier is obtained from the packet to judge whether or not the VLAN identifier exists in said administrative information, and, when the VLAN

identifier is judged to exist in said administrative information, the packet is judged to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

5 19. A recording medium according to claim 18 on which a computer-readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

10 in a case where the received packet is the untagged packet and unicast, transferring of the packet to which the VLAN identifier obtained based upon the destination MAC address of the packet is attached is executed when whether or not the destination MAC address of the received packet exists in said administrative information is judged and the destination MAC address is
15 judged not to exist in said administrative information, the acquisition of the VLAN identifier from said administrative information based upon the destination MAC address being executed by obtaining the source MAC address from the received packet and then obtaining the VLAN identifier corresponding to the source MAC address from the administrative
20 information.

20. A recording medium according to claim 19 on which a computer-readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

25 the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

in a case where the received packet is the untagged packet and broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed
30 when whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which said destination IP address belongs exists in said administrative information is judged and the wireless terminal is judged to exist in said administrative information, by obtaining the VLAN identifier of

the wireless terminal from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

21. A recording medium according to claim 20 on which a computer-
5 readable VLAN packet processing program for a wireless interconnecting device is recorded, wherein

the VLAN packet processing program causes said wireless interconnecting device to execute the following steps:

10 in a case where the received packet is the untagged packet and broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address belongs is judged not to exist
15 in said administrative information, by obtaining the source MAC address from the untagged packet and then obtaining the VLAN identifier corresponding to the source MAC address from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

20 22. A wireless interconnecting device having VLAN function in a wireless LAN system in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

25 said wireless interconnecting device is enabled to assign a VLAN group to each of the wireless terminals belonging thereto based on a MAC address of each of the wireless terminals and to store administrative information of the wireless terminals, and

30 said wireless interconnecting device judges whether a received packet is tagged or untagged and, in a case where the packet is judged to be tagged, transmits the packet with a tag removed when the packet is unicast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, while transferring the packet when the packet is broadcast, and transmitting the packet with the tag removed when the packet

is broadcast and needs to be transmitted to a wireless terminal belonging to the wireless interconnecting device, and,

in a case where the received packet is judged to be untagged in the judgment whether the received packet is tagged or untagged, when the untagged packet is unicast, obtains a corresponding VLAN identifier from said administrative information based upon a destination MAC address of the packet and transfers the packet with the VLAN identifier attached thereto, while, when the untagged packet is broadcast, obtaining a corresponding VLAN identifier from said administrative information based upon a destination IP address of the packet and transferring the packet with the VLAN identifier attached thereto.

23. A wireless interconnecting device having VLAN function according to claim 22, wherein

said administrative information includes the VLAN identifier, the IP address and a subnet mask related to the MAC address of the wireless terminal.

24. A wireless interconnecting device having VLAN function according to claim 23, wherein

when the received packet is tagged and broadcast, the wireless interconnecting device judges whether or not the packet needs to be transmitted to the wireless terminal belonging to the wireless interconnecting device according to a judgment whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, and, when the wireless terminal is judged to exist in said administrative information, the wireless interconnecting device judges the packet to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

25. A wireless interconnecting device having VLAN function according to claim 24, wherein

in the judgment whether or not the wireless terminal belonging to the

same subnetwork as the subnetwork to which the destination IP address of the packet belongs exists in said administrative information, when the wireless terminal is judged not to exist in said administrative information, the wireless interconnecting device obtains a VLAN identifier from the packet to judge whether or not the VLAN identifier exists in said administrative information, and, when the VLAN identifier is judged to exist in said administrative information, the wireless interconnecting device judges the packet to be transmitted to the wireless terminal belonging to the wireless interconnecting device.

26. A wireless interconnecting device having VLAN function according to claim 25, wherein

in a case where the received packet is the untagged packet and unicast, transferring of the packet to which the VLAN identifier obtained based upon the destination MAC address of the packet is attached is executed when whether or not the destination MAC address of the received packet exists in said administrative information is judged and the destination MAC address is judged not to exist in said administrative information, the acquisition of the VLAN identifier from said administrative information based upon the destination MAC address being executed by obtaining the source MAC address from the received packet and then obtaining the VLAN identifier corresponding to the source MAC address from said administrative information.

27. A wireless interconnecting device having VLAN function according to claim 26, wherein

in a case where the received packet is the untagged packet and broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when whether or not a wireless terminal belonging to the same subnetwork as the subnetwork to which said destination IP address belongs exists in said administrative information is judged and the wireless terminal is judged to exist in said administrative information, by obtaining the VLAN identifier of

the wireless terminal from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

28. A wireless interconnecting device having VLAN function according to claim 27, wherein

in a case where the received packet is the untagged packet and broadcast, transferring of the packet to which the VLAN identifier obtained based upon the destination IP address of the packet is attached is executed when a wireless terminal belonging to the same subnetwork as the subnetwork to which the destination IP address belongs is judged not to exist in said administrative information, by obtaining the source MAC address from the untagged packet and then obtaining the VLAN identifier corresponding to the source MAC address from said administrative information and attaching the obtained VLAN identifier to the untagged packet.

29. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 22.

30. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 23.

31. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side

via said wireless interconnecting device, wherein

said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 24.

5 32. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

10 said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 25.

15 33. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 26.

20 34. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 27.

25 35. A wireless VLAN system comprising a wireless interconnecting device, in which a LAN backbone line wired with network devices is provided with wireless terminals enabled to exchange packets with wired side via said wireless interconnecting device, wherein

30 said wireless interconnecting device is the wireless interconnecting device having the VLAN function according to claim 28.

36. A method for detecting a movement of a terminal in a LAN system,

comprising the steps of:

receiving, in an administrative device, device identification information of a moved terminal transmitted from a interconnecting device to which the terminal is moved, and

5 judging that the terminal is moved when a discrepancy of information on the terminal having the device identification information is found in a database composed of information on terminals stored in advance in said administrative device together with the device identification information.

10 37. A method for detecting a movement of a terminal in a LAN system according to claim 36, wherein,

when a discrepancy of information on a terminal having the device identification information is found, said administrative device updates said database and transmits the updated data to the wireless interconnecting device
15 from which the device identification information is transmitted.

38. A method for detecting a movement of a terminal in a LAN system according to claim 37, wherein,

when the discrepancy of the information on the terminal having the
20 device identification information is found, said administrative device instructs a interconnecting device from which the terminal is moved to delete the device identification information of the terminal and related information.

39. A program for detecting and processing a movement of a terminal to
25 be executed in an administrative device provided in a LAN system to perform administration of the system, comprising the following steps:

a first step to receive device identification information of a moved terminal from a interconnecting device to which the terminal is moved;

a second step to detect a discrepancy of information in a database
30 composed of information on terminals stored in advance in said administrative device together with the device identification information; and

a third step to update said database according to a judgment that the terminal is moved when the discrepancy of the information on the terminal

having the device identification information is found in said database.

40. A program for detecting and processing a movement of a terminal according to claim 39, further comprising

5 a fourth step, after the update, to transmit the updated data to the interconnecting device from which the device identification information is transmitted.

41. A program for detecting and processing a movement of a terminal according to claim 40, further comprising

10 a fifth step, when the discrepancy of the information on the terminal having the device identification information is detected, to instruct a interconnecting device from which the terminal is moved to delete the device identification information of the terminal and related information.

42. A recording medium on which recorded is a program for detecting and processing a movement of a terminal to be executed in an administrative device provided in a LAN system to perform administration of the system, wherein

20 said program comprises the following steps:

a first step to receive device identification information of a moved terminal from a interconnecting device to which the terminal is moved;

25 a second step to detect a discrepancy of information in a database composed of information on terminals stored in advance in said administrative device together with the device identification information; and

a third step to update said database according to a judgment that the terminal is moved when the discrepancy of the information on the terminal having the device identification information is found in said database.

30 a fourth step, after updating said database, to transmit the updated data to the interconnecting device from which the device identification information is transmitted; and

a fifth step, when the discrepancy of the information on the terminal is detected, to instruct a interconnecting device from which the terminal is

moved to delete the device identification information of the terminal and related information.

43. An administrative device provided in a LAN system to perform administration of the system, wherein

said administrative device, receiving device identification information of a moved terminal from a interconnecting device to which the terminal is moved, judges that the terminal is moved when a discrepancy of information on a terminal having the device identification information is found in a database composed of information on terminals stored in advance in said administrative device together with the device identification information, and, after updating said database, transmits the updated data to the interconnecting device from which the device identification information is transmitted while

instructing a interconnecting device from which the terminal is moved to delete the device identification information of the terminal and related information.

44. A LAN system to which network devices are connected to exchange packets thereamong, comprising

an administrative device for performing administration of the system, wherein

said administrative device is an administrative device according to claim 43.